IDENTIFICATION OF MUSICAL CHORDS – REACTION TIMES SUPPORT THE ASSUMPTION OF TWO DIFFERENT PROCEDURES

Herbert Bruhn
Institute for Music, University of Flensburg, Germany

Background

The experiment was designed following the experiments of Bharucha & Stoeckig (1986, 1987) and Justus & Bharucha (2002). The identification of chords is seen as problem solving by cognitive procedures.

Aims

The results of the experiment should prove the hypothesis, that the difficulty of the identification is dependant on the distance from the tonality of the probe tone – the farther the distance is (measured in the circle of fifths), the longer the identification would last.

Method

In a speeded decision experiment, 10 male and 10 female music students had to distinguish major and minor chords. The chords were played after a short sequence of random tones, a scale and four chords serving the rules of a cadenza (probe tone technique). The now following chord (target) had to be recognized as minor or major as fast as possible. Each subject contributed 2000 correct decisions.

Results

The expected effect could only be observed for major chords following a major prime and with reaction times longer then 450 ms. The particiation of minor chords either as prime or as target seem to change the center of activation. – Correct decisions with reaction times shorter than 400 ms were not at all systematically affected by the primed tonality.

Conclusions

The author considers separate procedures of information processing: A fast pre-attentive automated procedure and a slower procedure, influenced by expectations evoked by long term memory. These considerations lead to the theory of Pribram (1991), who defined stages of information linked to brain areas: The first stage supplies fast procedures, subcortically and automated – presumably the simple ones as kind of reflexes, the differentiated ones developed by implicit learning. A second stage of information processing is guided by procedures of categorization and chunking, which are affected by remembering and recognition – by primed cognitive representations.

ISBN: 3-931852-66-0
ISSN: 1617-6847